

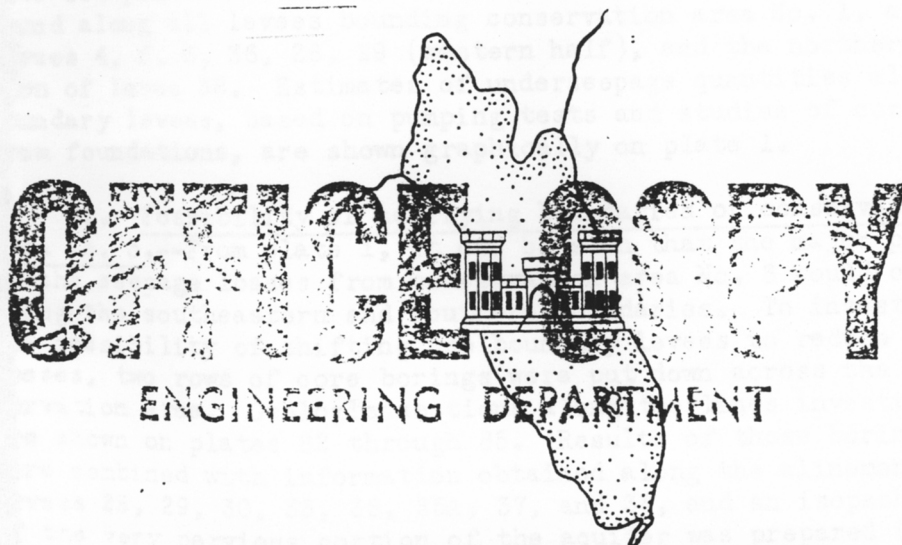
PARTIAL DEFINITE PROJECT REPORT

CENTRAL AND SOUTHERN FLORIDA PROJECT

FOR FLOOD CONTROL AND OTHER PURPOSES

PART I

AGRICULTURAL AND CONSERVATION AREAS
SUPPLEMENT 7 - DESIGN MEMORANDUM
PERMEABILITY INVESTIGATIONS
BY WELL - PUMPING TESTS



CORPS OF ENGINEERS, U.S. ARMY
OFFICE OF THE DISTRICT ENGINEER
JACKSONVILLE, FLA.

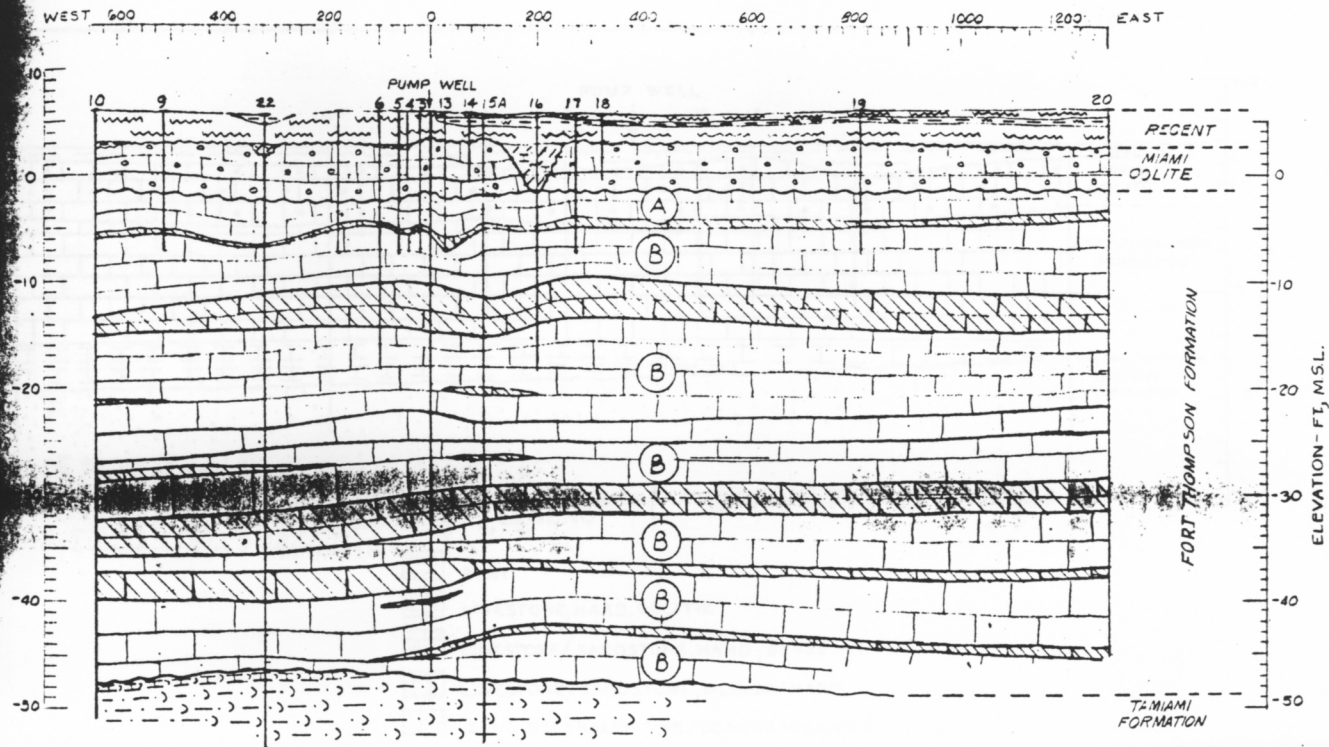
FEB 16 1953

F. APPLICATION OF TEST RESULTS TO PROJECT

30. Probable distribution of underseepage along conservation area boundaries.--An examination of the underseepage quantities given in table D-18 and the geologic sections across the pumping-test sites demonstrates that there is good correlation between aquifer lithology and thickness and underseepage quantity. High quantities of underseepage were found at locations where the foundation was hard, solution-riddled limestone. That area includes all of levee 30, the southern half of levee 33, and the eastern half of levee 29. The northward change from the highly pervious limestone to more dense rock containing relatively thick beds of sand and marl is abrupt and occurs near the midpoint of levee 33. There is no apparent transition zone from the very pervious to the less pervious type of foundation. Foundations containing hard rock interbedded with sand and marl are considered to have transmissibilities represented by tests Nos. 5 and 11 extend northward and eastward from the midpoint of levee 33 along the entire length of levees 37 and 35 and to about the midpoint of levee 35A. Along levee 38 there is no distinct change in lithology although the results of tests Nos. 9 and 10 show that there is considerable decrease in permeability northward. From other geological studies made in that area, it is believed that test No. 5 is representative of the southern miles of levee 38 and that the foundation along the remainder of the alignment is relatively impervious. Foundations which have low permeabilities (less than 5 c.f.s./mile/ft. head) are found along all levees bounding conservation area No. 1, along levees 4, 5, 6, 36, 28, 29 (western half), and the northern portion of levee 38. Estimates of underseepage quantities along all boundary levees, based on pumping tests and studies of cores from foundations, are shown graphically on plate 1.

31. Possibility of modifying boundaries of conservation area No. 3.--From plate 1, it can be seen that the major portion of the seepage losses from conservation area No. 3 would occur along the southeastern and southern boundaries. To investigate the possibility of shifting the boundary levees to reduce those losses, two rows of core borings were put down across the conservation area. Geologic sections along the lines investigated are shown on plates 82 through 85. Results of those borings are combined with information obtained along the alignments of levees 23, 29, 30, 33, 35, 35A, 37, and 38, and an isopach map of the very pervious portion of the aquifer was prepared (plate 2). The thickness of all the aquifer above the base of the most very pervious member is shown on the map although in the north and northeast portions of the area the effective thickness is actually less than that indicated because of the presence of sand, marl, and dense rock interbedded with the more pervious limestone. The very pervious portion of the aquifer thins rapidly

DISTANCE FROM PUMP WELL - FT.



LEGEND



PEAT



MARL, ORGANIC



CLAY, ORGANIC, PARTLY SANDY



LIMESTONE, OOLITIC, HARD, SOLUTION-RIDDLED



LIMESTONE, HARD, SLIGHTLY POROUS TO DENSE



SAND AND SHELL MARL



LIMESTONE, HARD, GENERALLY DENSE, FRESH-WATER FOSSILS



LIMESTONE, HARD, GENERALLY POROUS AND SOLUTION-RIDDLED



LIMESTONE, COQUINA, MEDIUM-HARD

ONE SYMBOL SUPERIMPOSED ON ANOTHER INDICATES COMBINATION OF RESPECTIVE MATERIALS

CENTRAL AND SOUTHERN FLORIDA
GEOLOGIC SECTION
PUMPING-TEST SITE NO. 1

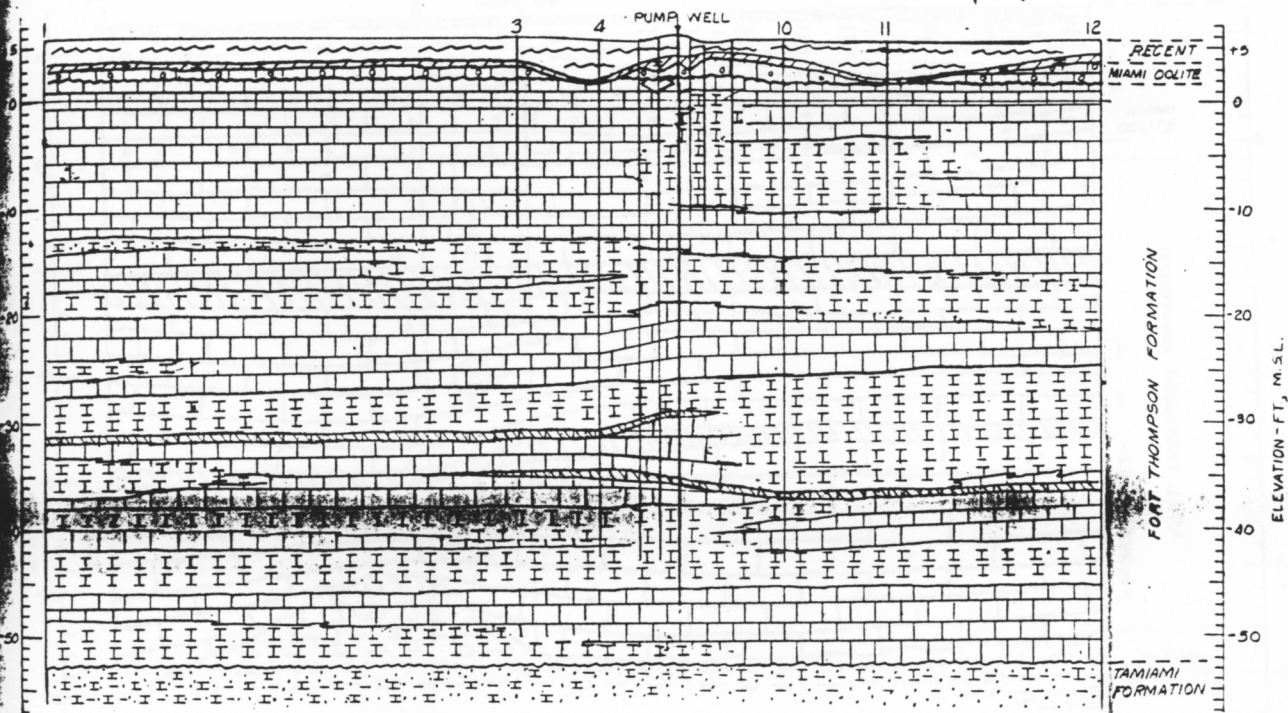
SCALES: AS SHOWN

JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
TO ACCOMPANY PARTIAL DPR, PART I,
SUPP. 7 DATED: FEB. 16, 1953

SHEET 1 OF 14 FILE NO. 400-21,716

WEST 480 400 320 240 160 80 0 80 160 240 320 SOUTHEAST

DISTANCE FROM PUMP WELL - FT.



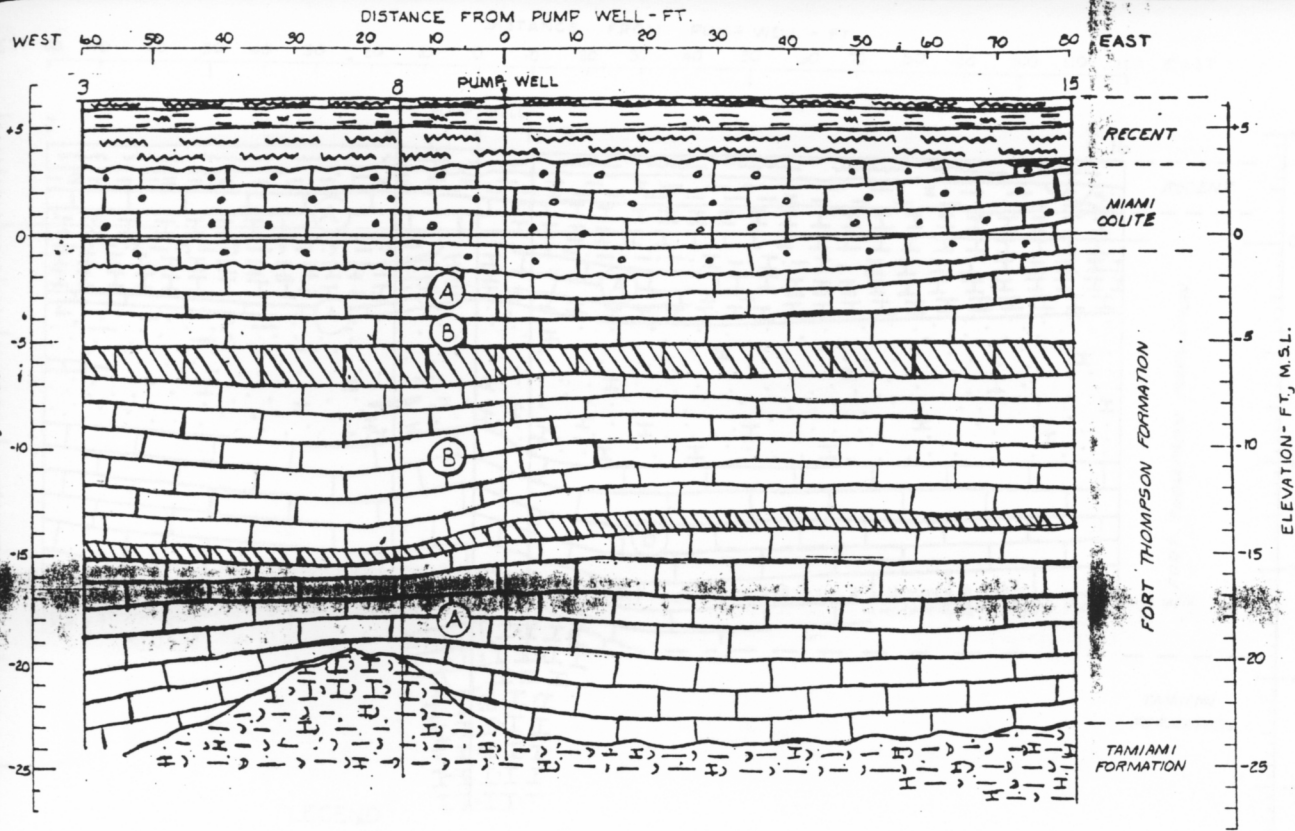
LEGEND

- | | | | |
|--|--|--|--|
| | PEAT | | LIMESTONE OR SANDSTONE, MEDIUM-HARD. |
| | CLAY, ORGANIC | | LIMESTONE, HARD, DENSE, FRESH-WATER FOSSILS. |
| | LIMESTONE, HARD, COLITIC | | SAND, MARLY, FINE-GRAINED |
| | LIMESTONE OR SANDSTONE, HARD, GENERALLY POROUS & WITH SOLUTION HOLES | | |

ONE SYMBOL SUPERIMPOSED ON ANOTHER INDICATES COMBINATION OF RESPECTIVE MATERIALS

CENTRAL AND SOUTHERN FLORIDA
GEOLOGIC SECTION
PUMPING-TEST SITE NO. 3

SCALES: AS SHOWN
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
TO ACCOMPANY PARTIAL DPR, PART 1,
SUPP. 7 DATED: FEB. 16, 1953
SHEET 1 OF 8 FILE NO. 400-21,716



LEGEND



PEAT



MARL, ORGANIC



LIMESTONE, HARD, DENSE



LIMESTONE, COLITIC, HARD, SOLUTION-RIDDLED



SHELL MARL, SANDY



LIMESTONE, HARD, GENERALLY POROUS, SOME SOLUTION CHANNELS



LIMESTONE, HARD, DENSE, FRESH-WATER FOSSILS



LIMESTONE COQUINA, MEDIUM-HARD, POROUS

ONE SYMBOL SUPERIMPOSED ON ANOTHER INDICATES COMBINATION OF RESPECTIVE MATERIALS

CENTRAL AND SOUTHERN FLORIDA
GEOLOGIC SECTION
PUMPING-TEST SITE NO 4

SCALES: AS SHOWN
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
TO ACCOMPANY PARTIAL DPR, PART
SUPP 7 DATED FEB. 16, 1953
SHEET 1 OF 8 FILE NO. 400-21,71